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## Publication Output of Journal 'Clinical Cancer Research' (2005-2018): A Bibliometric Analysis

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# **PUBLICATION OUTPUT OF JOURNAL 'CLINICAL CANCER RESEARCH' (2005-2018): A BIBLIOMETRIC ANALYSIS**

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## **ABSTRACT**

The paper analysis, authorship productivity and collaborative research of research articles available on Clinical Cancer Research for a period of fourteen years from 2005 to 2018. The data were downloaded from the Clarivate Analytics - web of science database. The data included fourteen thousand one hundred fifty six (14156) research articles and sixty eight thousand one hundred seventy (68170) authors. This paper analysis the co-authorship network using CiteSpace Java application with the aim of the understanding of research collaboration in this journal. This paper test the appropriateness of relative growth rate and doubling time.

**KEYWORDS:** Authorship pattern, Bibliometrics, Co-authorship network; Centrality Analysis, Degree of collaboration, CiteSpace application.

## **INTRODUCTION**

Clinical Cancer Research (CCR) (Print ISSN: 1078-0432; Online ISSN: 1557-3265) published by the American Association for Cancer Research (AACR) has been treated as a source journal for this study. It is noted in the indexes of Current Contents/Clinical Medicine, MEDLINE, Scopus and Web of Science. CCR as a month to month publication from 1995 to 2003, its interest has stimulated a double in size and exchange to fortnightly distribution in August 2003 onwards. The Journal is particularly keen on clinical preliminaries assessing new medicines, joined by research in pharmacology, and atomic modifications or biomarkers that foresee reaction or protection from treatment. The impact factor (IF) of the journal in 2018-2019 was 8.911 and five years IF is 9.174 (AACR Journals Metrics). The scientometric analysis of the journal will give an outline of the journal information at a small scale level and the components of oncology research at a macro level.

## **OBJECTIVES**

Scientometric techniques were applied to analyze the research documents published in the Clinical Cancer Research (CCR) for the period of the selected 14 years between 2005 and 2018. The foremost objectives of the bibliometric study are to spot and carry out these facets:

- To analysis the annual distribution of research publications and the number of citations during the selected period
- To study the growth of literature and doubling time of the publications

- To analyze the relative growth rate (RGR) and doubling time (DT) of the research output.
- To explore the collaboration and productivity of the author, institution, and country.

## **METHODOLOGY**

CCR was picked as the source journal since it is the better peer-reviewed medical journal on oncology and one of the best known in the country. All the research articles for the years 2005 to 2018 were added in the analysis. At the time of data preparation, the last issue of 2019 had not even been printed so didn't have a total arrangement of documents for the year 2019. The data required for this study have been separated from the Web of Science (WOS) database published by Clarivate Analytics on 26th November 2019. The search sequence used "Clinical Cancer Research" in the "Publication Name" field for the year 2005-2018 to get the data. Further, the files analyzed by utilizing Histcite and Citespace software applications.

## **GENERAL ANALYSIS OF THE CCR PUBLICATIONS**

Table 1: Details of the Important Points of the Data Sample during 2005 to 2018

<b>S. No</b>	<b>Details about Sample</b>	<b>Observed Values</b>
1	Source Title	Clinical Cancer Research (CCR)
2	Duration	2005 to 2018
3	Collection span	14 Years
4	Total Number of Records	14156
5	Total Number of Authors	68170
6	Frequently used words	12462
7	Document Types	10
8	Languages	02
9	Contributing Countries	86
10	Contributing Institutions	8948
11	Institutions with Sub Division	26370
12	Total cited references	248640
13	Total Local Citation Scores	16520
14	Total Global Citation Scores	438949
15	H - Index	201
16	Impact Factor	8.911

It is illustrated in Table 1 regarding the information about CCR has been retrieved using Histcite (Version12.03.17) and citespace (Version 5.4.R3) software applications and collected complete information on Geographical area, Source Title, Collection span, Total records Local Citation Score, Global Citation Score, Cited, References, Number of Authors, Keywords, h-index, and Impact Factor.

Table 2: Year-Wise Distribution of Article Publications and Citations

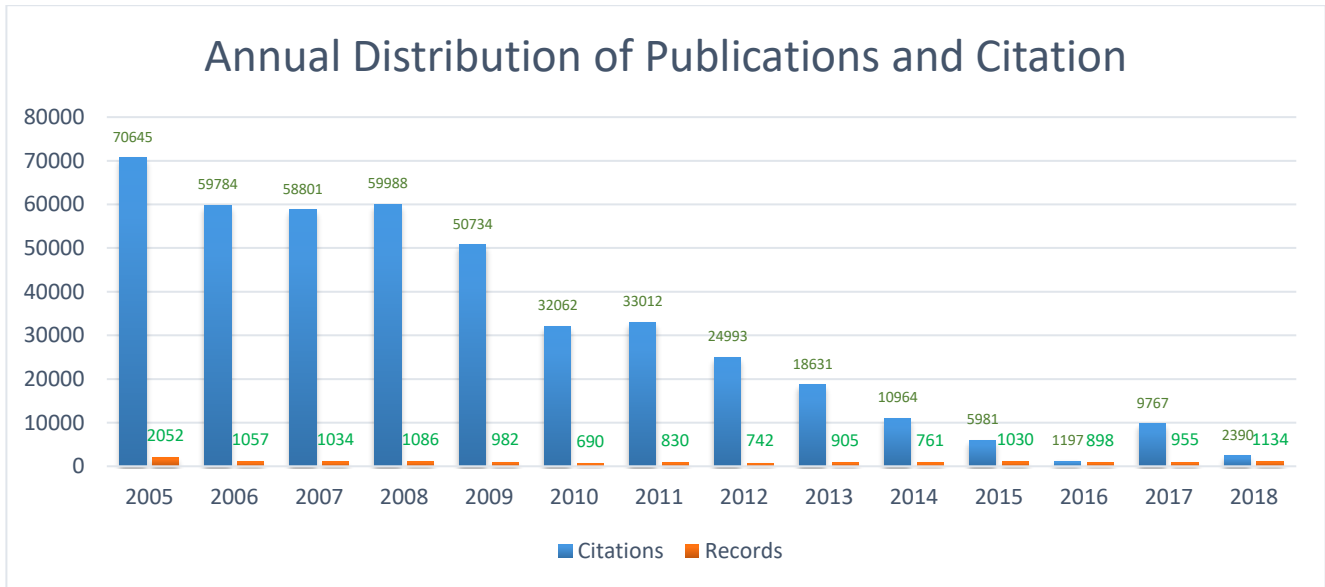
S. No	Year	TP	%	Rank	TLCS	%	Rank	TGCS	%	Rank
1	2005	2052	14.5	1	2285	13.83	1	70645	16.09	1
2	2006	1057	7.5	4	1889	11.43	3	59784	13.62	3
3	2007	1034	7.3	5	1913	11.58	2	58801	13.40	4
4	2008	1086	7.7	3	1819	11.01	4	59988	13.67	2
5	2009	982	6.9	7	1660	10.05	5	50734	11.56	5
6	2010	690	4.9	14	1154	6.99	8	32062	7.30	7
7	2011	830	5.9	11	1318	7.98	6	33012	7.52	6
8	2012	742	5.2	13	1198	7.25	7	24993	5.69	8
9	2013	905	6.4	9	915	5.54	9	18631	4.24	9
10	2014	761	5.4	12	801	4.85	10	10964	2.50	10
11	2015	1030	7.3	6	647	3.92	11	5981	1.36	12
12	2016	898	6.3	10	493	2.98	12	1197	0.27	14
13	2017	955	6.7	8	341	2.06	13	9767	2.23	11
14	2018	1134	8	2	87	0.53	14	2390	0.54	13
	Total	14156	100		16520	100		438949	100	

\* TP =Total Papers, TLCS=Total Local Citation Score, TGCS = Total Global Citation Score,

The above table 2 reveals that the numbers of research documents published from 2005 to 2008 are gradually decreased nearly 1000 research articles and after 2008 the numbers of research documents are gradually increased. According to the publication output from the table 2 the year wise distribution of research documents, 2005 has the highest number of research documents 2052 (14.5%) with 2285 (13.83%) of Total local citation score and 70645 (16.09%) of Total global citation score values and being prominent among the 14 years output and it stood in first rank position. The year 2018 has 1134 (8.00%) research documents and it stood in second position with 87 (0.53%) of Total local citation score and 2390 (0.54%) of Total global citation score were scaled. The year 2008 has 1086 (7.7%) research documents and it stood in third position with 1819 (11.01%) of Total local citation score and 59988 (13.67%) of Total global citation score were scaled.

The below figures reflect the year wise publications, TLCS and TGCS of the CCR publications.

Figure 1 Annual Distribution of Publications and Citation



### RELATIVE GROWTH RATE (RGR) AND DOUBLING TIME (DT)

Two parameters like relative growth rate and doubling time are used to study the growth trend in publications related to CCR for the period 2005–2018.

Table 3 represents RGR and DT for CCR publications for the period of 2005-2018, that its relative growth rates has decreased from 2006 (0.42) to 2018 (0.08) in the fourteen year period. Doubling time is the measure of time it takes for an offered amount to double in size at a consistent development rate. The Doubling time increased from 1.65 in 2006 to 8.66 in 2018 and the doubling time is highest in the year 2016 with 9.90. According to the above analysis, it can be known that the RGR was less than DT and it almost shows that constant growth in research output.

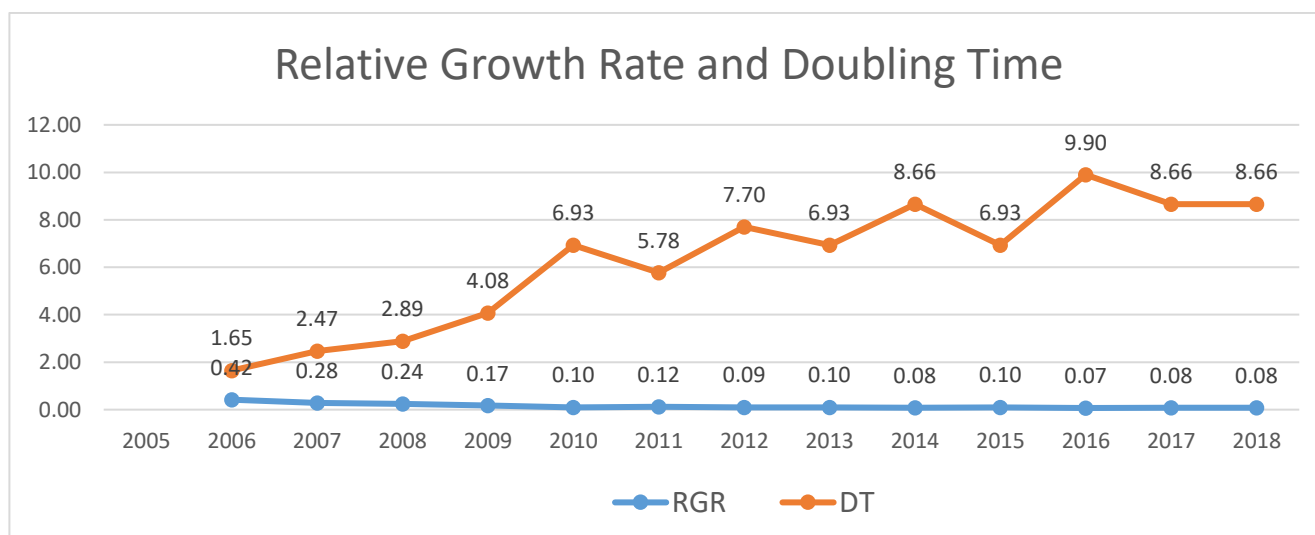
Table 3: Relative growth rate (RGR) and doubling time (DT) of publications

S. No	Year	TP	%	Cumulative	W1	W2	RGR	DT
1	2005	2052	14.50	2052	..	7.62	..	..
2	2006	1057	7.50	3109	7.62	8.04	0.42	1.65
3	2007	1034	7.30	4143	8.04	8.32	0.28	2.47
4	2008	1086	7.70	5229	8.32	8.56	0.24	2.89
5	2009	982	6.90	6211	8.56	8.73	0.17	4.08
6	2010	690	4.90	6901	8.73	8.83	0.10	6.93
7	2011	830	5.90	7731	8.83	8.95	0.12	5.78
8	2012	742	5.20	8473	8.95	9.04	0.09	7.70
9	2013	905	6.40	9378	9.04	9.14	0.10	6.93
10	2014	761	5.40	10139	9.14	9.22	0.08	8.66

11	2015	1030	7.30	11169	9.22	9.32	0.10	6.93
12	2016	898	6.30	12067	9.32	9.39	0.07	9.90
13	2017	955	6.70	13022	9.39	9.47	0.08	8.66
14	2018	1134	8.00	14156	9.47	9.55	0.08	8.66
	Total	14156	100.00	113780				

\* TP =Total Papers, RGR =Relative Growth Rate, DT=Doubling Time

Figure 2: Relative growth rate (RGR) and doubling time (DT) of publications



### ANALYSIS THE COLLABORATION NETWORK OF TOP 10 COUNTRIES

The citation network of collaborating countries consisted of 93 nodes and 507 connections between 2005 and 2018 (Figure 3), and the 10 nations which made the real segment of the commitments of the total outputs are displayed in Table 4.

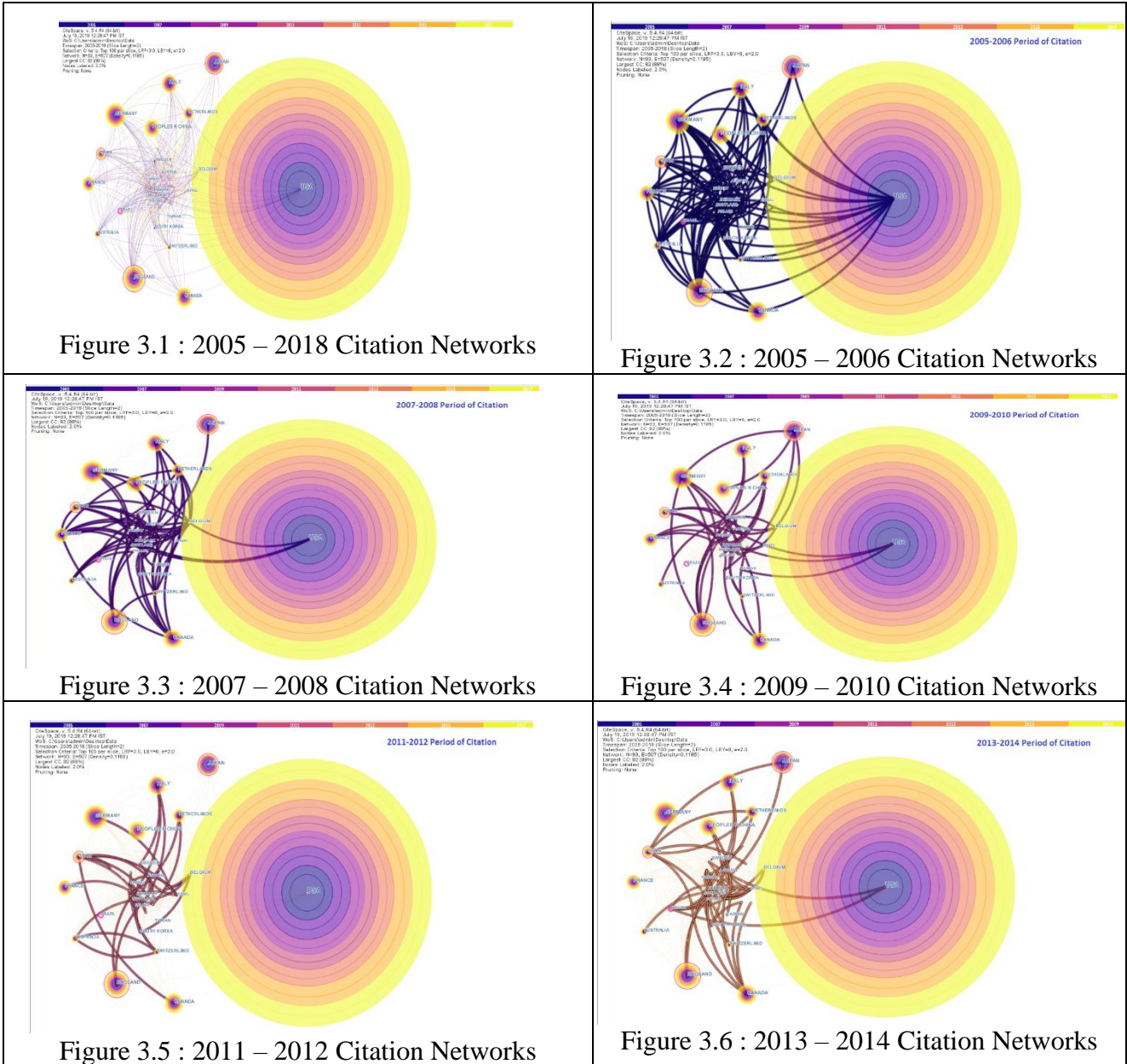
Table 4: Collaboration networks of Top 10 Countries by number of papers and Citations

S. No	Country	TP	%	TLCS	%	TGCS	%
1	USA	8637	43.42	11769	49.03	282388	44.75
2	UK	1152	5.79	1496	6.23	39095	6.19
3	Germany	979	4.92	1253	5.22	35136	5.57
4	Canada	850	4.27	1033	4.30	26874	4.26
5	Japan	844	4.24	1145	4.77	34954	5.54
6	Peoples R China	777	3.91	627	2.61	22252	3.53
7	Italy	730	3.67	871	3.63	25693	4.07
8	France	632	3.18	815	3.40	22615	3.58
9	Netherlands	608	3.06	645	2.69	19659	3.12
10	Spain	487	2.45	538	2.24	13937	2.21
	Others	4197	21.10	3812	15.88	108501	17.19
		19893	100.00	24004	100.00	631104	100.00

\* TP =Total Papers, TLCS=Total Local Citation Score, TGCS = Total Global Citation Score,

The major contribution to research comes from USA 8637 (43.42%) with a global citation score (TGCS) of 282388 (44.75%) followed by UK 1152 (5.79%) with TGCS of 39095 (6.19%), Germany 979 (4.92%) with TGCS of 35136 (5.57%), Canada 850 (4.27%) with TGCS of 26874 (4.26%) Japan 844 (4.24%) with TGCS of 34954 (5.54%) Peoples R China 777 (3.91%) with TGCS of 22252 (3.53%) and the rest below 750. Figure 3, our analysis an extensive variety of sizes of circle nodes, which explain to various volumes of documents published by all countries.

Figure 3: Visualization of the Country Citation Network



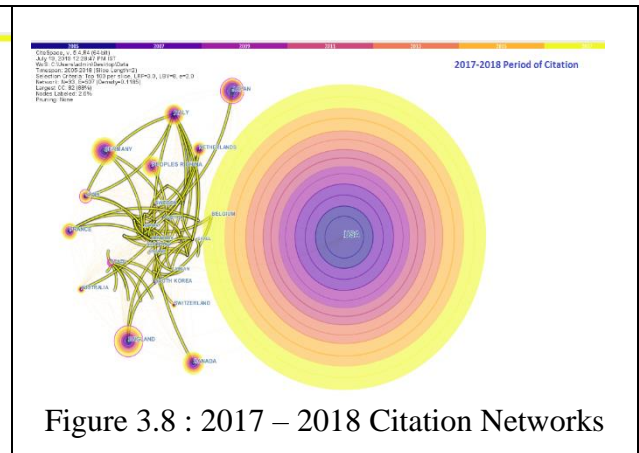
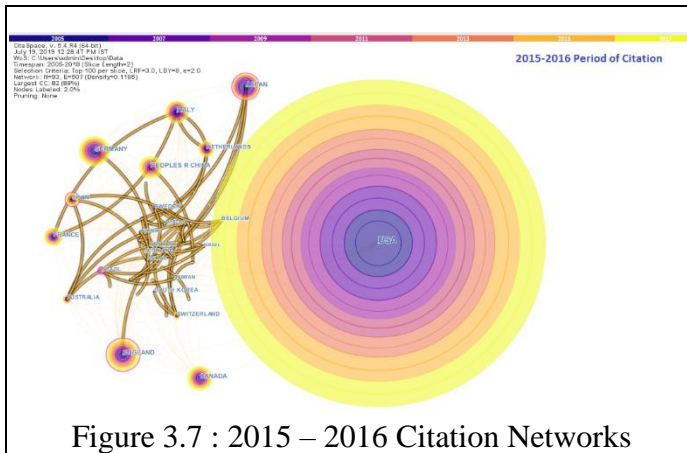
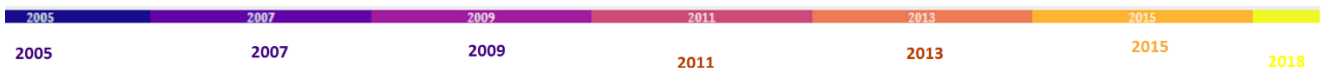


Figure 3, our analysis an extensive variety of sizes of circle nodes, which explain to various volumes of documents published by all countries. We are mapping and visualized the countries networks, we can easily find out many nodes with clarity of connection between each node, meaning large quantity of countries linked to related countries.



In the above network figures 3.1 to 3.8, Blue-violet denotes the links that occurred in 2005-2011, whereas yellow represents the links that occurred in 2018. The conversion from a dark color to light color represents the time span from past to present (2005 to 2018). In the same manner it explains the visualization of the country citation network. Regarding publications by a country, the United States made the most valid citation network to CCR for the period 2005–2006. (Figure 3.2) and 2007 – 2008 (Figure 3.3).

### **ANALYSIS OF YEAR WISE H-INDEX, CITED REFERENCE AND NUMBER OF AUTHORS**

The researcher has predicted here the value of H-Index, citation, and its average, cited references and its average, numbers of authors and the average number of authors per articles were analyzed. Total 14156 research articles (1011 research articles per year) were published by 111801 authors (7986 authors per year) during 14 years, 438949 citations (31354 citations per year) and 375235 cited references (26803 cited references per year) were analyzed from the above table 5. Total H-Index value is 1002 and its average value is 72 per year. It has been observed that the year 2005 has achieved highest H-Index Value (123) followed by 2006 (118), and 2007 (113) respectively.

Number of citations analysis was carried out and it was found that the total citation value is 438949 and its average value is 31354 per year and it was found that the maximum number of 70645 citations received in 2005 and ranked in first place and followed by the second rank has occupied in 2008 with 59988 citations. The third place has got in 2006 with 59784. The average citation per paper registered by this analysis was 56.87 in 2007 and ranked in first place and followed by the second rank has occupied in 2006 with 56.56. The third place has got in 2008 with 55.24.

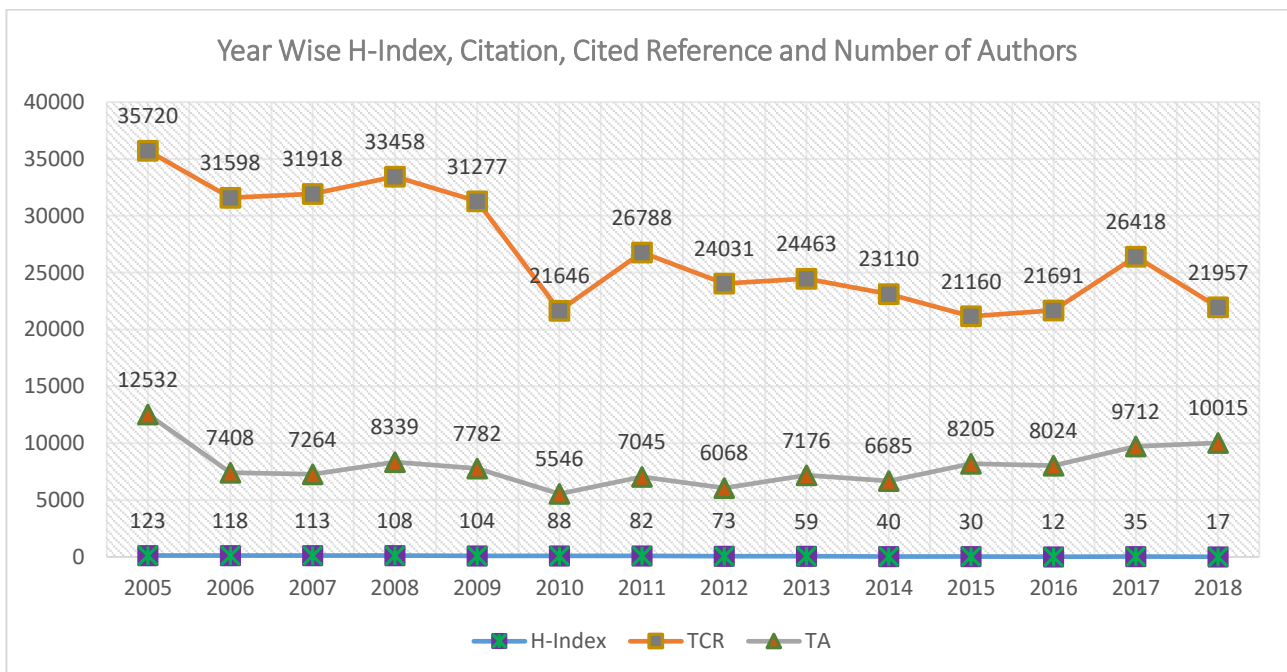


Table 5: Distribution of year wise H-Index, Citation, Cited Reference and Total Authors

S No	Year	TP	H-Index	TC	ACPP	TCR	ACRP	TA	AAPA
1	2005	2052	123	70645	34.43	35720	17.41	12532	6.11
2	2006	1057	118	59784	56.56	31598	29.89	7408	7.01
3	2007	1034	113	58801	56.87	31918	30.87	7264	7.03
4	2008	1086	108	59988	55.24	33458	30.81	8339	7.68
5	2009	982	104	50734	51.66	31277	31.85	7782	7.92
6	2010	690	88	32062	46.47	21646	31.37	5546	8.04
7	2011	830	82	33012	39.77	26788	32.27	7045	8.49
8	2012	742	73	24993	33.68	24031	32.39	6068	8.18
9	2013	905	59	18631	20.59	24463	27.03	7176	7.93
10	2014	761	40	10964	14.41	23110	30.37	6685	8.78
11	2015	1030	30	5981	5.81	21160	20.54	8205	7.97
12	2016	898	12	1197	1.33	21691	24.15	8024	8.94
13	2017	955	35	9767	10.23	26418	27.66	9712	10.17
14	2018	1134	17	2390	2.11	21957	19.36	10015	8.83
	Total	14156	1002	438949	429	375235	386	111801	113
	Mean	1011	72	31354	31	26803	28	7986	8

TC: Total Citations, ACPP: Average Citation per Paper (TC/TP), TCR: Total Cited Reference, ACRP: Average Cited Reference per Paper (TCR/TP), TA: Total Authors and AAPP: Average Authors per Paper (TA/TP).

Figure 4: Year Wise H-Index, Citation, Cited Reference and Number of Authors



The researcher has tried to analysis the cited references of the total 14156 research documents, totally 375235 cited references used by the researcher. Its mean value is 26803 and 28 cited reference is used per article. It has been observed that the year 2005 has used highest cited reference 35720 (average cited references per papers 17.41) followed by 2008 (33458, average cited references per papers 30.81), 2007

(31918, average cited references per papers 30.87) respectively. A total of 111801 authors has published their research papers during this period. Its mean value is 7986 and the average number of authors per article found to be 8 and it was found that the highest number of 12532 authors published their works in 2005 and ranked first and followed by the second rank has occupied in 2018 with 10015 authors. The third place has got in 2017 with 9712 authors. The Figure 4 reflect the year wise H-Index, Cited Reference and Numbers of authors of the research output during the sample periods.

### ANALYSIS OF HIGHLY PROLIFIC AUTHORS

The researcher has tried to find the highly prolific authors, based on research output data during the period of 2005 to 2018. The authors are ranked based on their number of research papers published.

Table 6: Showing Highly Prolific Authors Based on Their Number of Research Papers with H-Index

S No	Author	Records	Rank	TLCS	TGCS	ACPP	H – Index
1	Pazdur R	79	1	130	2930	37	26
2	Bates SE	76	2	83	898	12	16
3	Wang J	69	3	85	1225	18	18
4	Anderson KC	68	4	74	1638	24	24
5	Wang Y	63	5	50	1617	26	21
6	Kurzrock R	62	6	124	2360	38	24
7	Mills GB	61	7	143	2090	34	19
8	Liu Y	60	8	31	1017	17	19
9	Zhang L	59	9	64	1915	32	26
10	Wang L	57	10	78	1991	35	26
11	Li J	55	11	53	1462	27	19
12	Sood AK	52	12	104	2557	49	26
13	Steinberg SM	52	12	194	3322	64	20
14	Li L	51	13	41	1436	28	23
15	Zhang W	51	13	54	1563	31	23
16	Baselga J	50	14	104	2013	40	19
17	Janne PA	50	14	203	3563	71	27
18	Zhang Y	49	15	51	1638	33	22
19	Wistuba II	48	16	112	1801	38	23
20	de Bono JS	47	17	95	2254	48	17

Table 6 shows the details about the highly prolific 20 authors, the number of records, total local citation score, total global citation score, average citation per paper and the H – Index value of CCR publications for the period of 2005-2018. The authors who have published 47 and above research documents are listed above, they are ranked on the basis of their number of papers published and the rank start from 1 to 17. The highest 20 prolific authors together published a total number of 1159 research documents and it accounts for 8.2% of total output.

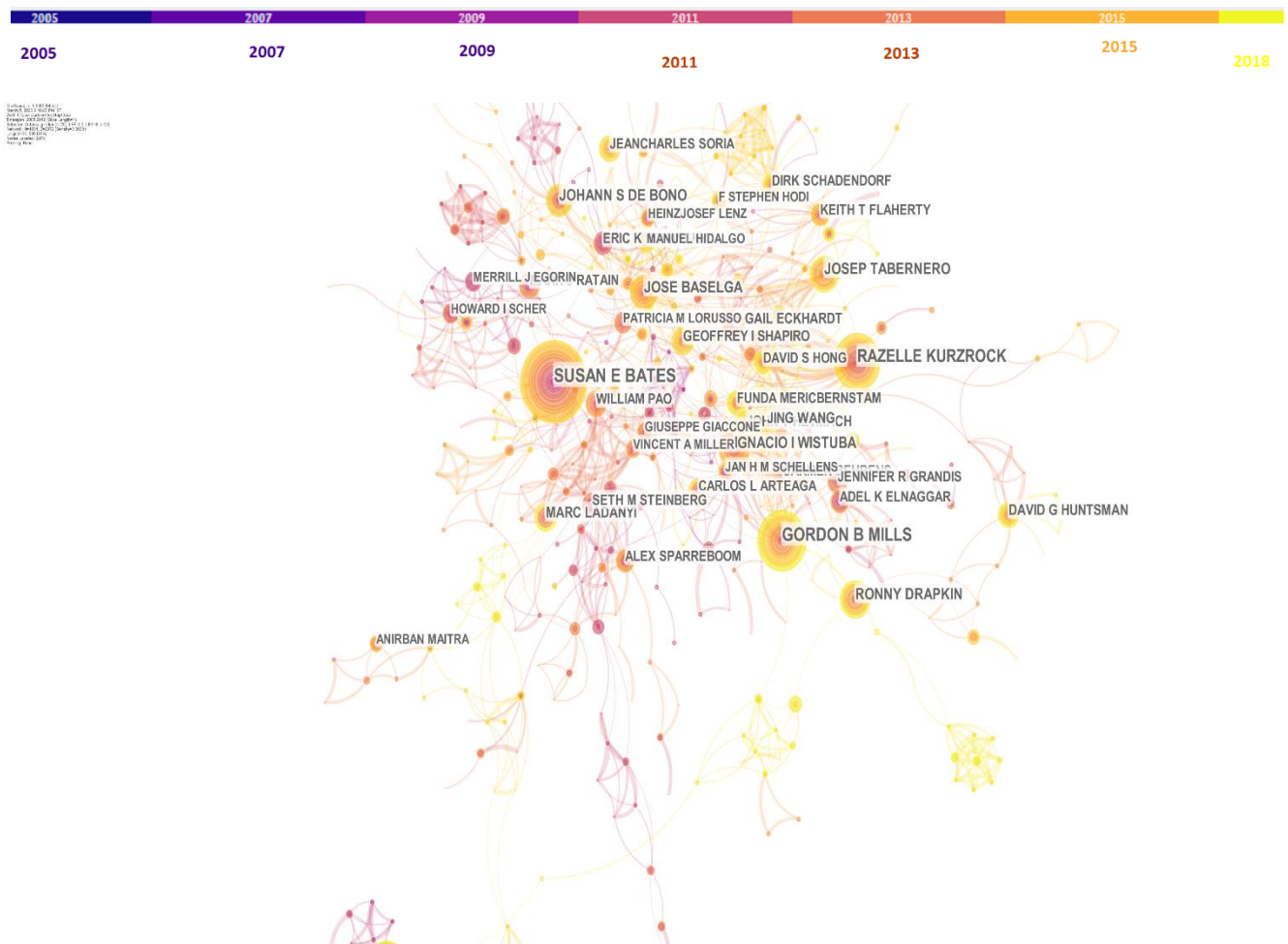
Among the 16170 authors, “Pazdur R” hold the 1<sup>st</sup> rank and the author published 79 (0.6%) research papers with 130 total local citation scores, 2930 total global citation scores, the average citation per

paper is 37 and the H-Index value is 26. Next to the author of “Bates SE” hold the 2<sup>nd</sup> rank and the author published 76 (0.51%) research papers with 83 total local citation scores, 898 total global citation scores, the average citation per paper is 12 and the H-Index value is 16. The 3<sup>rd</sup> rank hold by “Wang J” he contributed 69 (0.5%) research papers with 85 total local citation scores, 1225 total global citation scores, the average citation per paper is 18 and the H-Index value is 18.

The authors of Anderson KC (68), Wang Y (63), Kurzrock R (62), Mills GB (61), Liu Y (60), Zhang L (59), Wang L (57), Li J (55), Sood AK (52), Steinberg SM (52), Li L(51), Zhang W(51), Baselga J (50), Janne PA(50), Zhang Y (49), Wistuba II (48), de Bono JS (47) were produced below 69 and above 47 research documents and they are all stands in 04<sup>th</sup> to 17<sup>th</sup> positions and remaining authors were published below 47 articles.

It could be identified the highly prolific authors analysis, the authors Pazdur R, Bates SE and Wang J have published more research documents and identified as the most prolific authors of the research output. Particularly the author of “Perou CM” has received highest citation scores (3730).

Figure 5: Visualization of Highly Prolific Authors and Co-Authorship Networks



## CONCLUSION

The present study represents the scientometric analysis of research papers published on clinical cancer research during 2005-2018. The findings of the study are summarized as follows.

- The numbers of research documents published from 2005 to 2008 are gradually decreased nearly 1000 research articles and after 2008 the numbers of research documents are gradually increased.
- The year wise distribution of research documents, 2005 has the highest number of research documents 2052(14.5%) with 2285 (13.83%) of Total local citation score and 70645 (16.09%) of Total global citation score values and being prominent among the 14 years output and it stood in first rank position.
- It can be known that the RGR was less than DT and it almost shows that constant growth in research output.
- The major contribution to research comes from USA 8637 (43.42%) with a global citation score (TGCS) of 282388 (44.75%)
- The United States made the most valid citation network to CCR for the period 2005–2006 and 2007 – 2008.
- It has been observed that the year 2005 has achieved highest H-Index Value (123) followed by 2006 (118), and 2007 (113) respectively.
- The average citation per paper registered by this analysis was 56.87 in 2007 and ranked in first place and followed by the second rank has occupied in 2006 with 56.56. The third place has got in 2008 with 55.24.
- A total of 111801 authors has published their research papers during this period. Its mean value is 7986 and the average number of authors per article found to be eight.
- It could be identified the highly prolific authors analysis, the authors Pazdur R, Bates SE and Wang J have published more research documents and identified as the most prolific authors of the research output. Particularly the author of “Perou CM” has received highest citation scores (3730).

## REFERENCE

1. [https://clincancerres.aacrjournals.org/?utm\\_source=home&utm\\_medium=dropdown&utm\\_campaign=menu](https://clincancerres.aacrjournals.org/?utm_source=home&utm_medium=dropdown&utm_campaign=menu)
2. [https://aacrjournals.org/site/Info/impact\\_factor.xhtml](https://aacrjournals.org/site/Info/impact_factor.xhtml)
3. Agatha Santos do Nascimento, Oliveira FS de, Bianconi ML. Bibliometric Analysis of the Brazilian Periodical “Journal of Biochemistry Education.” M Lucia Bianconi. 2019; 47(3):249–56.
4. Vijayakumar P, Sivasubraminiyan G, Saraswati Rao M. Publication Output of Journal “Veterinary World” (2008-2017) : A Bibliometric Analysis. Libr Philos Pract. 2019 ;( May):2400.

5. Coimbra DR, Dominski FH, Correia CK, Andrade A. SCIENTIFIC PRODUCTION IN SPORTS SCIENCE JOURNALS : BIBLIOMETRIC ANALYSIS. Rev Bras Med do Esporte. 2019; 25(1):88–93.
6. Xie J, Gong K, Cheng Y, Ke Q. The correlation between paper length and citations : a Meta - analysis. Scientometrics [Internet]. 2019; 118(3):763–86. Available from: <https://doi.org/10.1007/s11192-019-03015-0>
7. Darko A, Chan APC, Huo X, Estate R, Hong T, Polytechnic K, et al. A scientometric analysis and visualization of global green building research. Build Environ [Internet]. 2019; 149(November 2018):501–11. Available from: <https://doi.org/10.1016/j.buildenv.2018.12.059>
8. YU D, XU Z, ANTUCHEVIČIENĖ J. BIBLIOMETRIC ANALYSIS OF THE JOURNAL OF CIVIL ENGINEERING AND MANAGEMENT BETWEEN 2008 AND 2018. J Civ Eng Manag. 2019; 25(5):402–10.
9. Mnzava E, Chirwa MN. A bibliometric analysis of the Tanzania Journal of Agricultural Science (1998-2017). Libr Philos Pract. 2019 ;( May):2322.
10. Saberi MK, Barkhan S, Hamzehei R. A Bibliometric Study and Visualization of Library Philosophy and Practice during 1998-2018. Libr Philos Pract. 2019 ;( May):2565.
11. Yu L, Wang G, Marcouiller DW. A scientometric review of pro-poor tourism research : Visualization and analysis Criteria / Method. Tour Manag Perspect [Internet]. 2019; 30(February):75–88. Available from: <https://doi.org/10.1016/j.tmp.2019.02.005>
12. Kabongo J. Twenty Years of the Journal of African Business : A Bibliometric Analysis. J African Bus [Internet]. 2019; 20(2):269–82.
13. Zhong B, Wu H, Li H, Sepasgozar S, Luo H, He L. A scientometric analysis and critical review of construction related ontology. Autom Constr [Internet]. 2019; 101(January):17–31. Available from: <https://doi.org/10.1016/j.autcon.2018.12.013>
14. Luo T, Tan Y, Langston C, Xue X. Mapping the knowledge roadmap of low carbon building : A scientometric analysis. Energy Build J. 2019; 194:163–76.
15. Wuni IY, Shen GQP, Osei-kyei R. Scientometric review of global research trends on green buildings in construction journals from 1992 to 2018. Energy Build [Internet]. 2019; 190:69–85. Available from: <https://doi.org/10.1016/j.enbuild.2019.02.010>
16. Guzeller CO, Celiker N. Bibliometrical analysis of Asia Pacific Journal of Tourism Research. Asia Pacific J Tour Res. 2018; 24(1):108–20.
17. Muthukrishnan M, Senthilkumar R. Mapping of Publications Productivity on Annals of Surgical Oncology 2005-2017 : A Study Based on Clarivate Analytics - Web of Science Database. Asian J Inf Sci Technol. 2018; 8(August):21–5.

18. Chen, C. (2006) CiteSpace II: Detecting and visualizing emerging trends and transient patterns in scientific literature. *JASIST*, 57(3), 359-377.
19. Chen, C. (2004) Searching for intellectual turning points: Progressive Knowledge Domain Visualization. *Proc. Nat. Acad. Sci.*, 101(Suppl.), 5303-5310.
20. Vijayakumar P, Sivasubraminiyan G, Saraswati Rao M. Publication Output of Journal 'Veterinary World' (2008-2017) : A Bibliometric Analysis. *Libr Philos Pract*. 2019 ;( May):2400.
21. Saberi MK, Barkhan S, Hamzehei R. A Bibliometric Study and Visualization of Library Philosophy and Practice during 1998-2018. *Libr Philos Pract*. 2019;(May):2565.